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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,620	09/24/2003	Daniel B. Roitman	10030589-1	5622
7590 04/10/2007 AGILENT TECHNOLOGIES, INC. Legal Department, DL429 Intellectual Property Administration P.O. Box 7599 Loveland, CO 80537-0599			EXAMINER JUNG, UNSU	
			ART UNIT 1641	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE 3 MONTHS		MAIL DATE 04/10/2007	DELIVERY MODE PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/669,620	ROITMAN ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Unsu Jung	1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 25 January 2007.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-19 and 29 is/are pending in the application.
- 4a) Of the above claim(s) 5,15 and 19 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-4,6-14,16-18 and 29 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 24 September 2003 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 2/23/04.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. Applicants' amendments to the specification in the reply filed on February 17, 2004 have been acknowledged and entered

2. Applicants' amendments to cancel claims 20-28 and 30-33 and amend claims 1, 12, and 29 in the reply filed on August 23, 2006 have been acknowledged and entered.

It is further noted that status identifier of claim 12 as being "original" is incorrect as claim 12 has been amended in the reply filed on August 23, 2006.

3. Claims 1-19 and 29 are pending, claims 5, 15, and 19 are withdrawn from consideration, and claims 1-4, 6-14, 16-18, and 29 are under consideration for their merits.

### ***Information Disclosure Statement***

5. The information disclosure statement filed on February 23, 2004 has been considered.

### ***Objections Withdrawn***

6. Applicant's arguments, see p7, filed on January 25, 2007, with respect to the objection of claims 12 and 29 have been fully considered and are persuasive.

The objection of claims 12 and 29 has been withdrawn in light of the amended claims 12 and 29 in the reply filed on January 25, 2007.

***Rejections Withdrawn***

7. Applicant's arguments, see pp12-13, filed on January 25, 2007, with respect to the rejection on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 10/379,107 have been fully considered and are persuasive. The rejection of claims 1-4, 6-14, 16-18, and 29 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 10/379,107 has been withdrawn in light of the terminal disclaimer in the reply filed on January 25, 2007.

A typo is noted on the p13 of the Office Action dated October 23, 2006, where "Claims 1-13" should be corrected to "Claims 1-4, 6-13."

***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-4, 6-14, and 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. In claim 1, the term "means associated with said at least one microbead particle for enabling or enhancing chemical conjugation between said at least one microbead particle and a ligand" is vague and indefinite. Applicant relies on paragraph [00013] of the specification for description of the term "means." However, the specification does not define term and it is unclear what the term "means associated with said at least one microbead particle for enabling or enhancing chemical conjugation between said at least one microbead particle and a ligand" means as the paragraph [00013] of the specification only discloses that the encoded and shaped microbead is suitable for chemical conjugation with ligands.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1, 2, 3, 7, 17, 18, and 29 are rejected under 35 U.S.C. 102(a) and 102(e) as being anticipated by Ravkin et al. (U.S. Patent No. 6,908,737, Published on Jan. 9, 2003 and Filed on Oct. 19, 2000).

Ravkin et al. anticipates instant claims by teaching a microbead particle system for bioassay comprising:

- at least one microparticle made of polymeric material (column 23, lines 42-45);
- a pattern encoded on at least one portion of said at least one microbead particle (column 20, lines 49-67);, wherein the pattern is physically marked into a digital data layer of the microbead particle to reveal or block a reflective, photoluminescent or absorbing pattern (spatial coding), wherein the digital data layer cooperates with a transducing layer (carrier material) of the microbead particle to produce a detectable signal (column 10, line 1-65).
- a selected geometry effectively associated with said at least one microbead particle, said selected geometry capable, alone or with other artifacts, of identifying at least microbead particle (column 20, lines 49-67); and
- means effectively associated with said at least one microbead particle for enabling or enhancing chemical conjugation between said at least one microbead particle and a ligand (column 22, lines 46-67).

With respect to "transducing layer," the original specification defines the term "transducing layer" as any suitable material that is detectable by any chemical or physical means (p19, paragraph [00054]) and the specification further discloses that "transducing layer" maybe polymeric, metallic, or dielectric inorganic material (p13, paragraph [00043]). Therefore, polymeric material of Ravkin et al., which is not physically marked, reads on the "transducing layer" of the claimed invention. With respect to the limitation of "capable of being read as a binary data," a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The limitation "capable of being read as a binary data" is an intended use the microbead particle system. Since the microbead particle system of Ravkin et al. meets all the structural limitations of the claimed invention, the microbead particle system of Ravkin et al. is capable of being read as a binary data.

With respect to claim 2, Ravkin et al. teaches a microbead particle system, wherein the said polymeric material is polymethylacrylates (thermoplastic, column 11, lines 12-25) and organosilicon resins (column 15, lines 22-30).

With respect to claim 18, Ravkin et al. teaches a microbead particle system, further comprising means for marking said at least one microbead particle after binding with an analyte, said at least one microbead particle being identified by the emission of dyes or luminescent molecules associated with the analyte (column 27, lines 3-11).

With respect to claim 7, Ravkin et al. teaches a microbead particle system, wherein the pattern is symmetrical (Fig. 10B).

With respect to claim 17, Ravkin et al. teaches that teaches a microbead particle system, further comprising a first embossed polymeric material having a first inner surface opposing a first patterned surface and a second embossed polymeric material having a second inner surface opposing a second patterned surface, wherein the first inner surface forms a bond with the second inner surface (column 10, lines 61-65 and Fig. 14).

According to the current specification (p5), the microbead particle of claim 1 formed by the method recited in claim 29. MPEP states that the lack of physical description in a product-by-process claim makes determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not of the recited process steps which must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith." In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

13. Claims 4 and 6 are rejected under 35 U.S.C. 102(a) and 102(e) as being anticipated by Ravkin et al. (U.S. Patent No. 6,908,737, Published on Jan. 9, 2003 and Filed on Oct. 19, 2000) in light of Kolesar, Jr. et al. (U.S. Patent No. 4,906,440, Mar. 6, 1990).

Ravkin et al. teaches a microbead particle system for bioassay as discussed above. Further, Ravkin et al. teaches a microbead particle system further comprising at least one layer of material, silicon nitride (column 15, lines 33-38) on polymeric material. However, Ravkin et al. fails to teach that the one layer of material is dielectric material. Kolesar, Jr. et al. teaches that silicon nitride is a dielectric material (column 8, line 8). Therefore, one of ordinary skill in the art would have realized that the microbead particle system of Ravkin et al. comprising a silicon nitride layer is a dielectric material.

With respect to claim 6, Ravkin et al. teaches a microbead particle system, wherein said at least one layer of material includes at least one surface suitable for chemical conjugation with a ligand (column 22, lines 46-67).

### ***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claims 8-14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ravkin et al. (U.S. Patent No. 6,908,737, Published on Jan. 9, 2003 and Filed on Oct. 19, 2000) in view of Tompkin et al. (U.S. Patent No. 5,754,520, May 19, 1998).

Ravkin et al. teaches a microbead particle system for bioassay as discussed above. However, Ravkin et al. fails to teach a microbead particle system, wherein the pattern encoded on at least one portion of the microbead particle generates a diffractive image.

Tompkin et al. teaches a method of using diffraction grating patterns as optical data carriers (Abstract). In the simplest case, the diffraction pattern is a diffraction grating with a symmetrical or asymmetrical profile shape, which diffracts light predominantly in two or single direction, respectively (column 12, lines 1-4). Diffraction pattern of one profile shape (one unit cell) can represent value "1" and the other (second unit cell) can represent "0" so that information can be stored in multiple number of unit cells, which represents a plurality of bits (column 12, lines 1-40).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ the optical coding method of Tompkin et al., which comprises use of symmetrical and asymmetrical diffraction grating patterns that are capable of generating diffractive images, in the microbead particle system of Ravkin et al. in order to use binary code to encode the microbead particle system. Combining diffraction grating coding method of Tompkin et al. with the coding methods of Ravkin et al. is advantageous as additional coding method would provide increased repertoire of different types of codes to distinguish the microbead particle system of Ravkin et al. with a reasonable expectation of success as the methods of generating and reading diffraction

grating pattern is done on polymeric surface is well known in the art of optical coding applications.

With respect to the recitation of claims 8-10, "wherein said pattern is capable of generating a diffractive image", generating a diffractive image is an inherent property of diffraction grating patterns of Tompkin et al. upon illumination.

With respect to claim 9, Tompkin et al. teaches a diffraction grating pattern comprising at least one unit cell, which is being repeated (column 12, lines 1-40).

With respect to claim 11, Tompkin et al. teaches a diffraction grating pattern comprising plurality of regions (unit cell), which is capable of producing a plurality of electromagnetic responses.

With respect to the recitation of claims 11 and 12 "wherein said pattern is capable of producing a plurality of electromagnetic responses, wherein the plurality of electromagnetic responses is selected from the group consisting of reflectivity, light absorption, and photoluminescence", producing a plurality of electromagnetic responses such as reflectivity, light absorption, and photoluminescence is an inherent property of diffraction grating patterns of Tompkin et al. upon illumination an electromagnetic source.

With respect to claim 13, Ravkin et al. teaches a pre-selected geometry associated with the microbead particle (column 20, lines 35-40). With respect to the recitation of "wherein the said geometry enables seating in a receiving substrate in a manner effective for particle identification", enabling seating in a

receiving substrate in a manner effective for particle identification is an inherent property of the pre-selected geometry associated with the microbead particle.

With respect to claim 14, Ravkin et al. teaches that the pre-selected surface shape and size is triangles, circles, or squares (column 5, lines 49-56), wherein said pre-selected surface shape is used in combination with color dyes (column 9, lines 43-44). With respect to the recitation of "said treatment creating an interferometric or holographic color pattern", creating an interferometric or holographic color pattern is an inherent property of said pre-selected surface shape with color dye treatment.

With respect to claim 16, Tompkin et al. teaches that the pattern represents ridges and troughs (Fig. 5) corresponding to constructive and destructive interference patterns. With respect to the recitation of "a relationship between said ridges and troughs being a function of refractive index of said polymeric material, refractive index of a medium through which the depth of said pattern is measured, and the wavelength of light impinging on said pattern", the ridges and troughs being a function of refractive index of said polymeric material, refractive index of a medium through which the depth of said pattern is measured, and the wavelength of light impinging on said pattern is an inherent property of the polymeric material of the microbead particle having patterns of ridges and troughs.

**Response to Arguments**

18. Rejection of claims 1, 2, 3, 7, 17, 18, and 29 under 35 U.S.C. 102(a) and 102(e) as being anticipated by Ravkin et al. and rejection of claims 4 and 6 under 35 U.S.C. 102(a) and 102(e) as being anticipated by Ravkin et al. in light of Kolesar, Jr. et al.

Applicant's arguments filed on January 25, 2007 have been fully considered but they are not persuasive in view of previously stated grounds of rejection.

Applicant's argument that Ravkin et al. does not anticipate the amended limitation of the pattern is physically marked into a digital data layer of the microbead particle to reveal or block a reflective, photoluminescent or absorbing pattern, wherein the digital data layer cooperates with a transducing layer of the microbead particle to produce a detectable signal is not found persuasive in view of above stated rejection (see item 12 above). Ravkin et al. teaches a microbead particle system, wherein the pattern is physically marked into a digital data layer of the microbead particle to reveal or block a reflective, photoluminescent or absorbing pattern (spatial coding), wherein the digital data layer cooperates with a transducing layer (carrier material) of the microbead particle to produce a detectable signal (column 10, line 1-65). With respect to "transducing layer," the original specification defines the term "transducing layer" as any suitable material that is detectable by any chemical or physical means (p19, paragraph [00054]) and the specification further discloses that "transducing layer" maybe polymeric, metallic, or dielectric inorganic material (p13, paragraph [00043]). Therefore, polymeric material of Ravkin et al., which is not physically marked, reads on the

"transducing layer" of the claimed invention. With respect to the limitation of "capable of being read as a binary data," a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The limitation "capable of being read as a binary data" is an intended use the microbead particle system. Since the microbead particle system of Ravkin et al. meets all the structural limitations of the claimed invention, the microbead particle system of Ravkin et al. is capable of being read as a binary data. Further, Ravkin et al. teaches that the pattern produces a detectable signal that is capable of being read as a binary data (column 15, lines 9-15).

19. Rejection of claims 8-14, and 16 under 35 U.S.C. 103(a) as being unpatentable over Ravkin et al. in view of Tompkin et al.

Applicant's arguments filed on January 25, 2007 have been fully considered but they are not persuasive in view of previously stated grounds of rejection.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed

invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that Tomkin et al. is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Tomkin et al. teaches a method of using diffraction grating patterns as optical data carriers, which can be used to generate plurality of bits (binary code) as discussed above and Ravkin et al. teaches the use of variety of coding methods to generate microbead particle system for use in biological assays (see item 17 above). Therefore, Tomkin et al. and Ravkin et al. are in the field of optical codes, which is a relevant field of applicant's endeavor and reasonably pertinent to the particular problem of generating variety of different types of optical codes to distinguish the microbead particle system of Ravkin et al. in biological assay applications.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596

(Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the advantage of combining diffraction grating coding method of Tompkin et al. as additional coding method in the coding methods of Ravkin et al. provide the motivation to combine teachings of Tomkin et al. and Ravkin et al. with a reasonable expectation of success in order to increase the repertoire of different types of codes to distinguish the microbead particle system of Ravkin et al. as the methods of generating and reading diffraction grating pattern is done on polymeric surface is well known in the art of optical coding applications. Further, it has long been held that it is obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose. *In re Kerkhoven*, 626 F.2d 846, 850, 2058 USPQ 1069, 1072 (CCPA 1980). Therefore, one of ordinary skill in the art would have had a reasonable expectation of success to include the diffraction grating coding method of Tompkin et al. in the microbead particle system of Ravkin et al. because it is well known in the optical coding arts that a variety of different optical coding methods can be utilized to generate binary data and thus it is within the realm of one of ordinary skill in the art to further include the diffraction grating coding method of Tompkin et al. in the microbead particle system of Ravkin et al.

20. Since the prior art fulfills all the limitations currently recited in the claims, the invention as currently recited would read upon the prior art.

***Conclusion***

21. No claim is allowed.

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Unsu Jung whose telephone number is 571-272-8506. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1641

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Unsu Jung, Ph.D.  
Patent Examiner  
Art Unit 1641

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